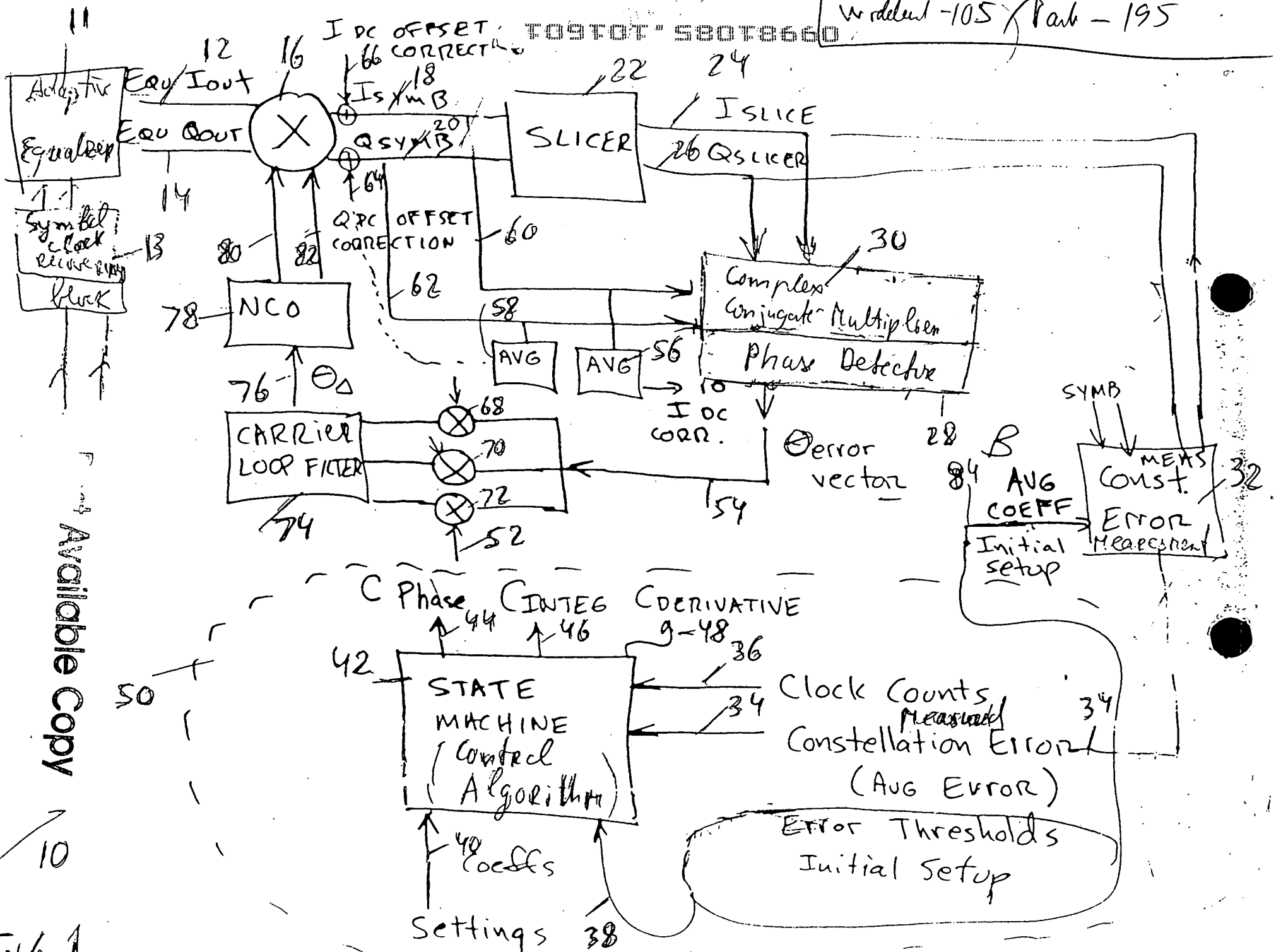
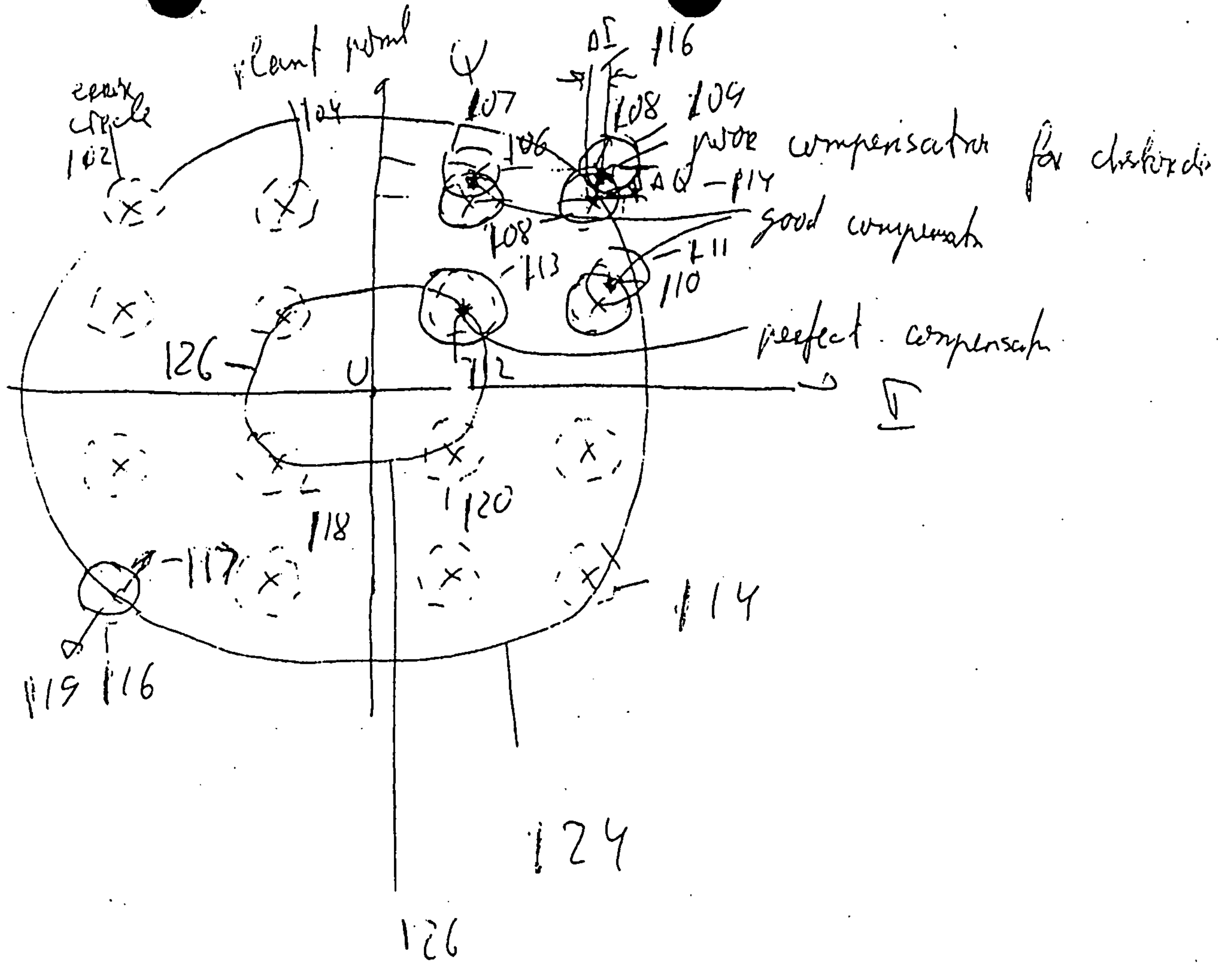


FIG. 1



plant point
102
104
106
107
108
109
110
111
112
113
114
116
117
118
119
120
124
126
Q
I
ΔI
ΔQ
good compensation
perfect compensation

FIG. 2

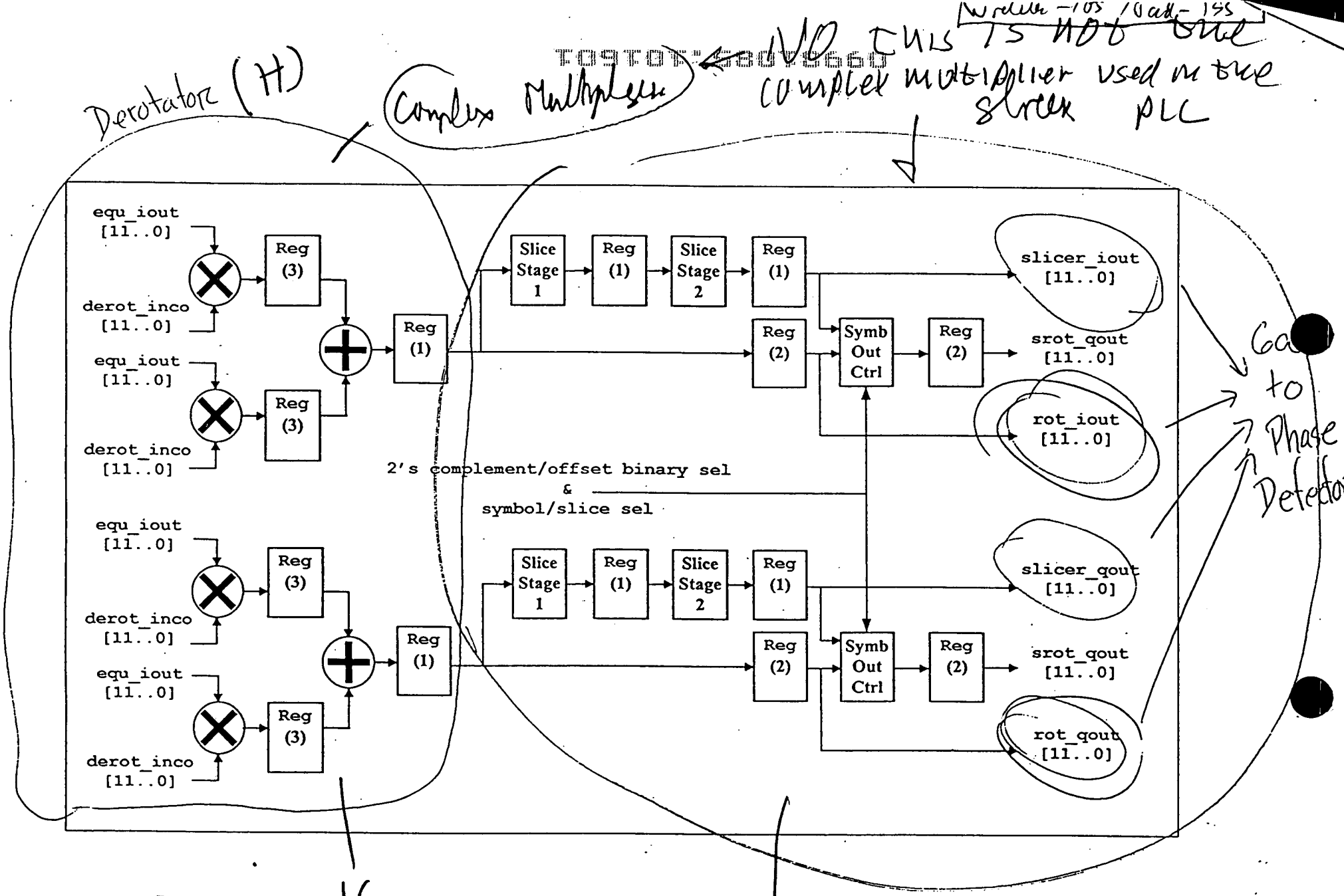

Derotator (H)
Complex Multiplier
equ_iout [11..0]
derot_inco [11..0]
Reg (3)
Reg (1)
Slice Stage 1
Slice Stage 2
Reg (2)
Symb Out Ctrl
slicer_iout [11..0]
srot_qout [11..0]
rot_iout [11..0]
slicer_qout [11..0]
rot_qout [11..0]
2's complement/offset binary sel
&
symbol/slice sel
16
22
Carrier Derotation

FIG. 3

Undelet -165/ Pat -195

conjugate

Complex Multiplier missing (E)

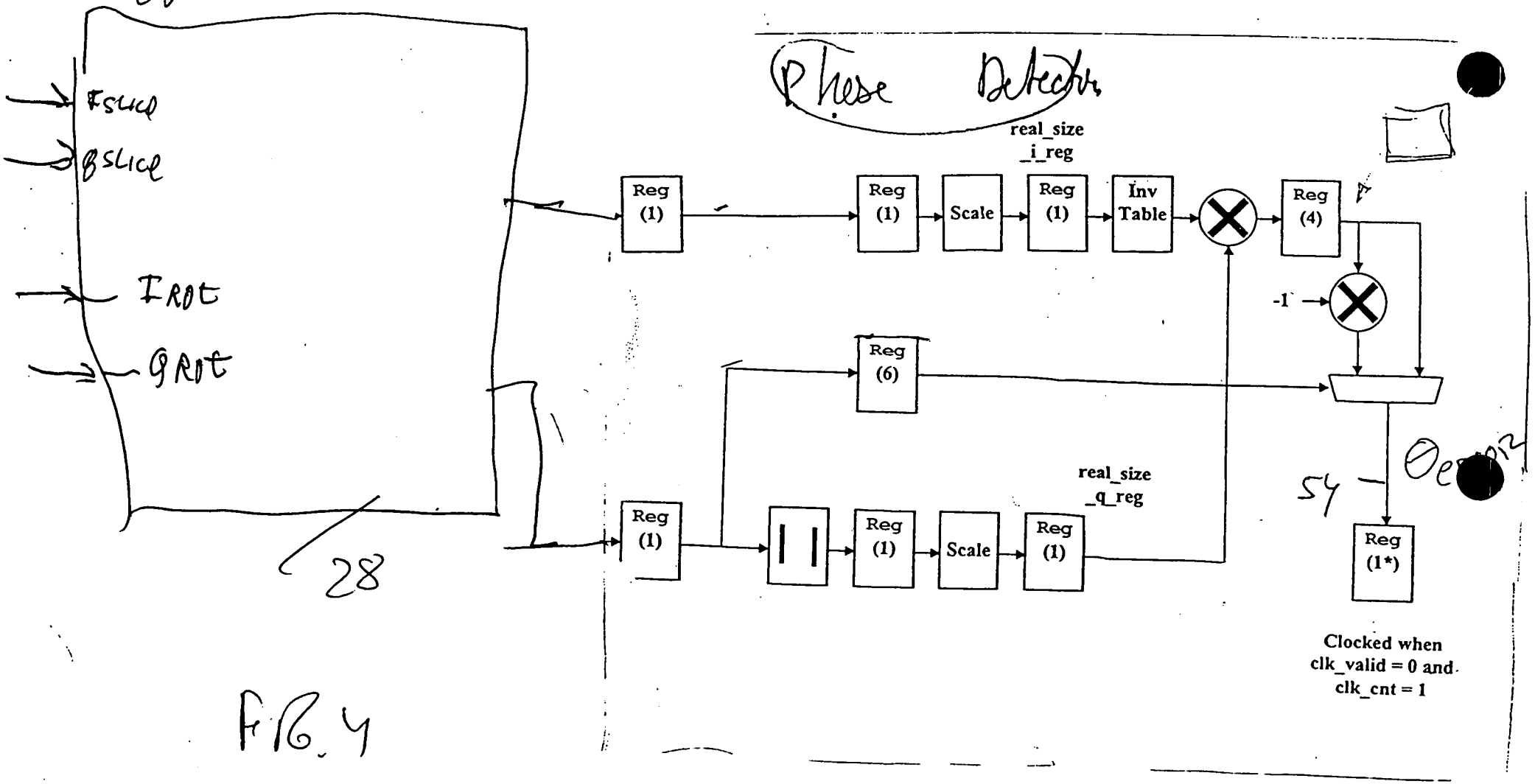
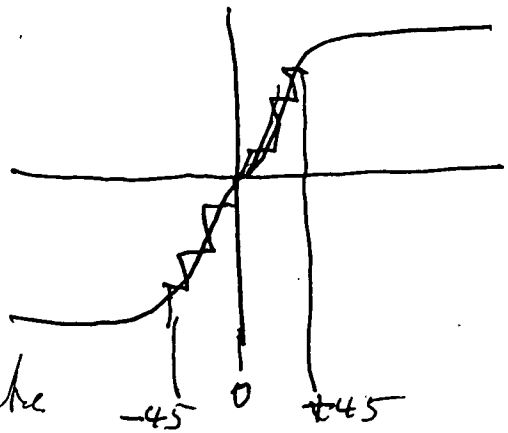


FIG. 4

Wrelelaw-105/Bank-195



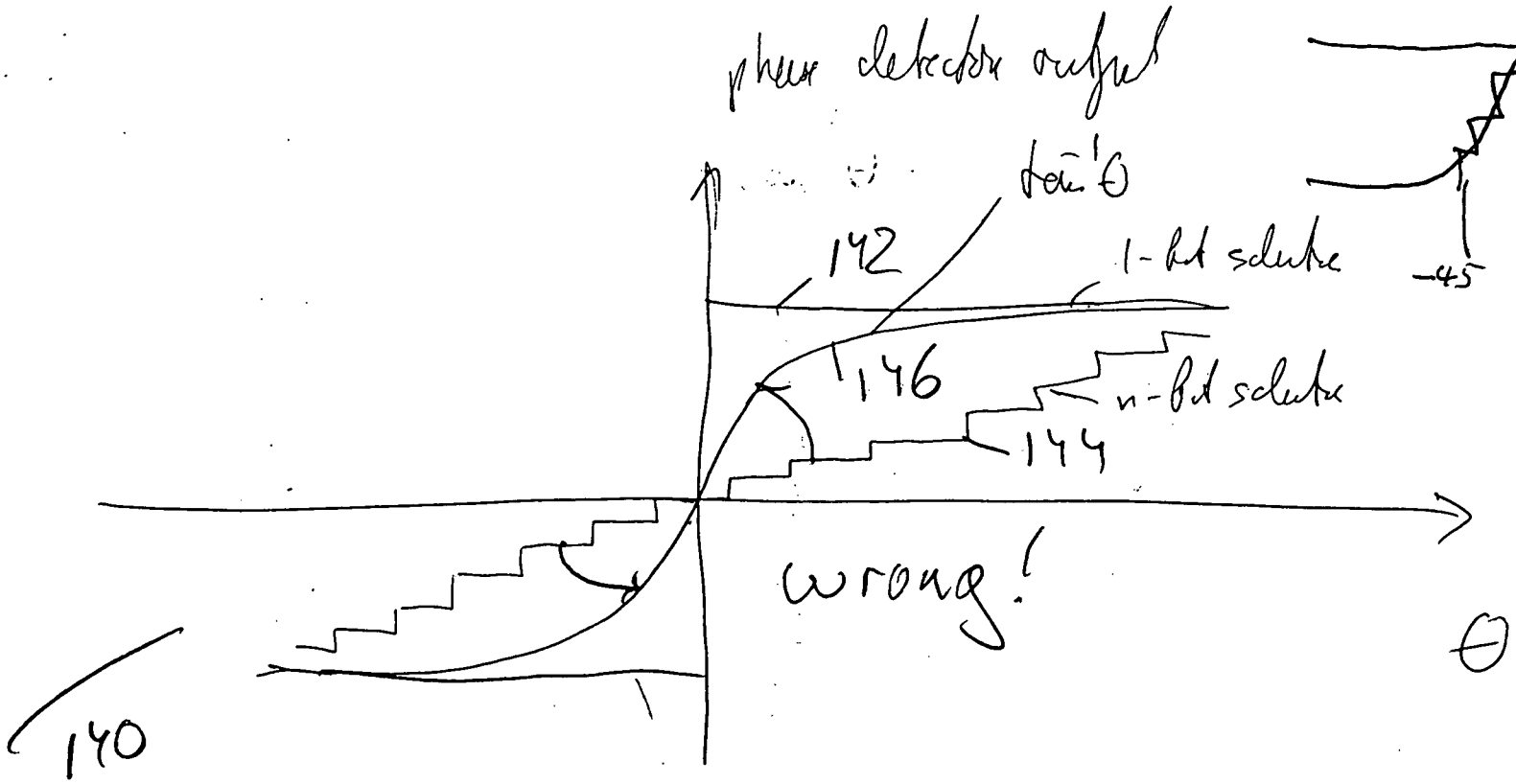


FIG. 5A

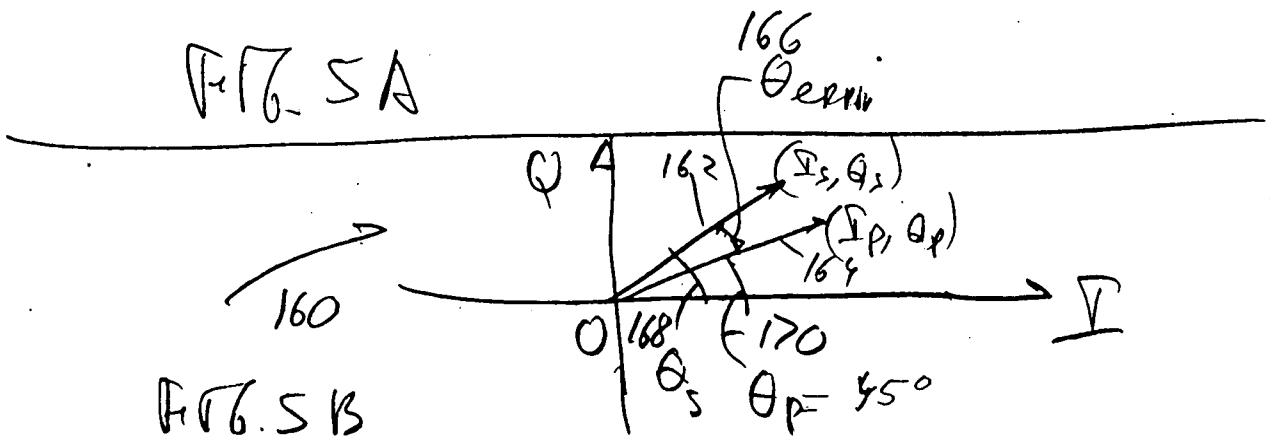
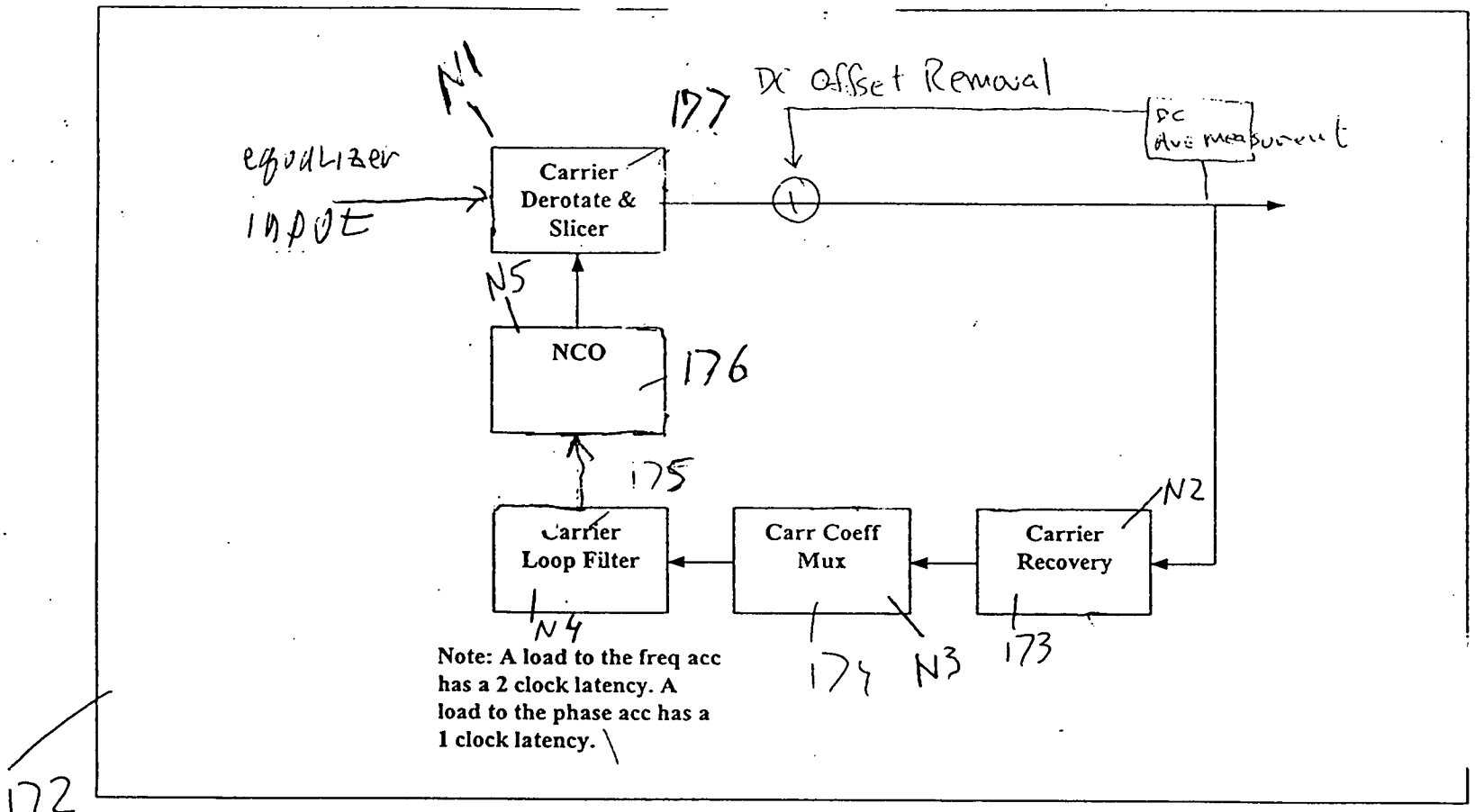


FIG. 5B

Wrdelad - 105/Pair-195



Total Loop Latency

FIG 5C

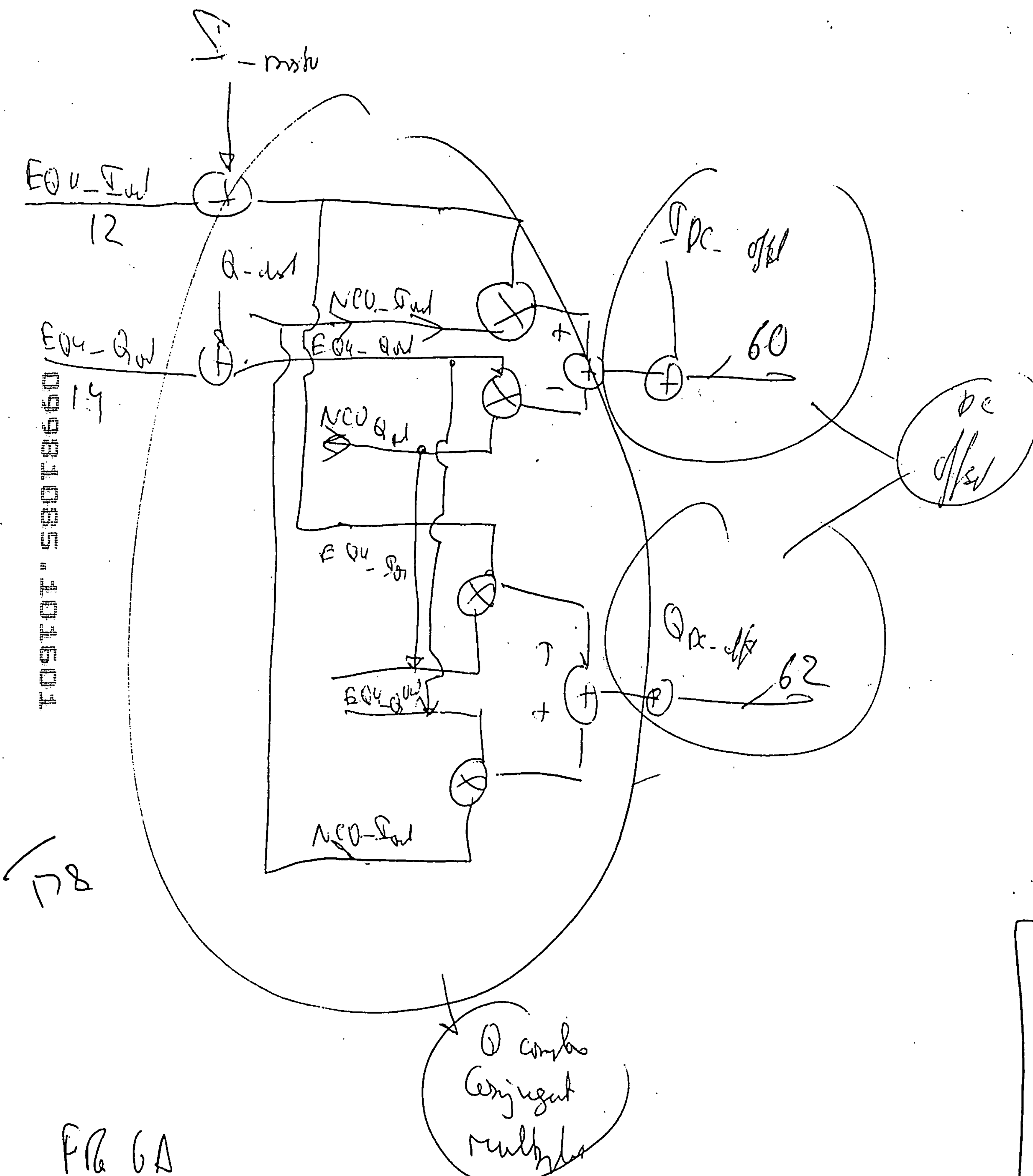


FIG 6A

Wideband-105/Feb-155

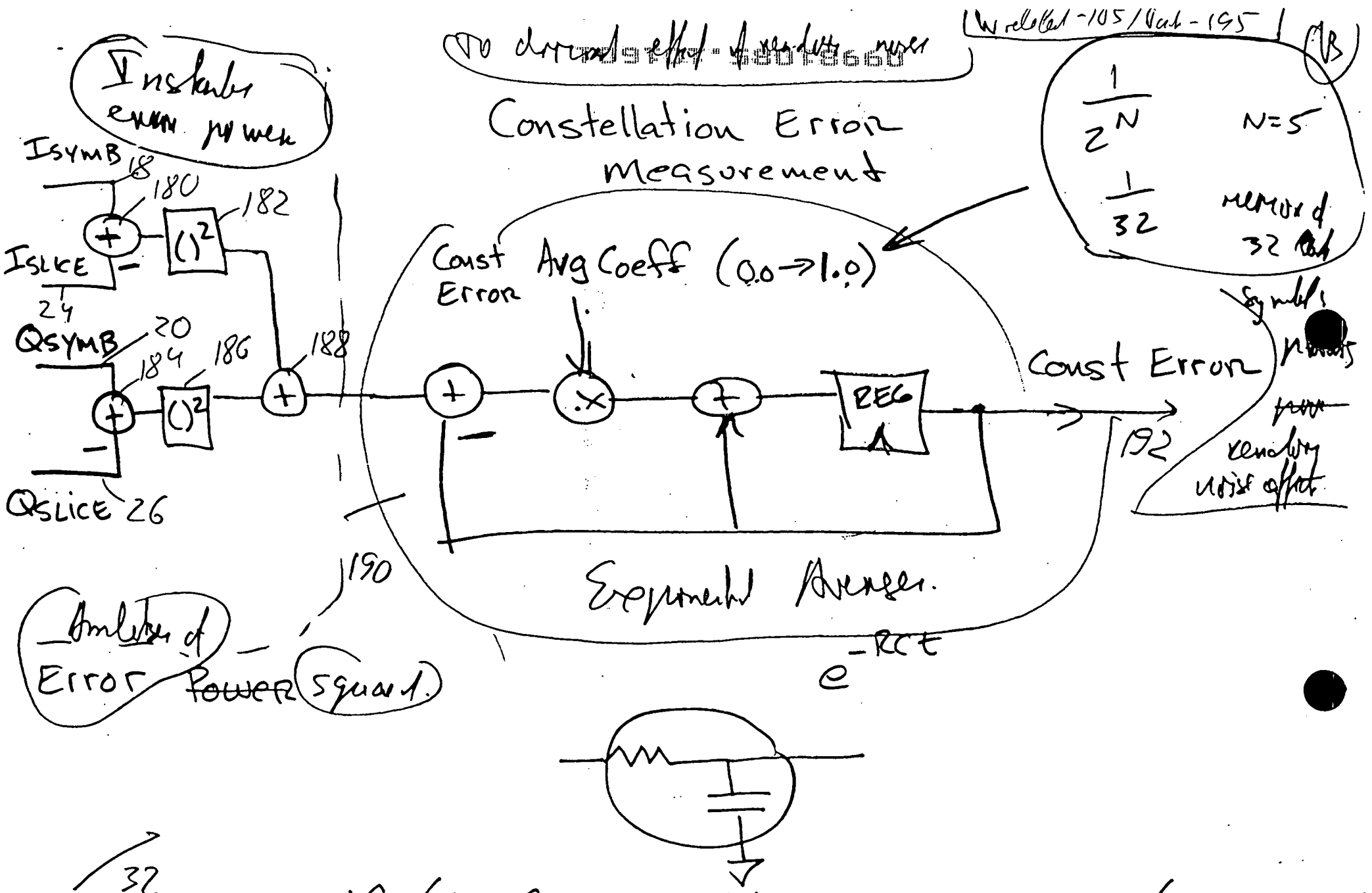

Constellation Error Measurement
ISYMB
ISLICE
QSYMB
QSLICE
Const Error
Avg Coeff (0.0→1.0)
REG
Const Error
Exponential Average
1/2^N
N=5
1/32
32
32
if (AVG COEFF = 0) OUTPUT IS HELD (INPUT IGNORE)
if (AVG COEFF = 1) OUTPUT = INPUT
else OUTPUT IS EXPONENTIAL AVG OF INPUTS

FIG. 6B

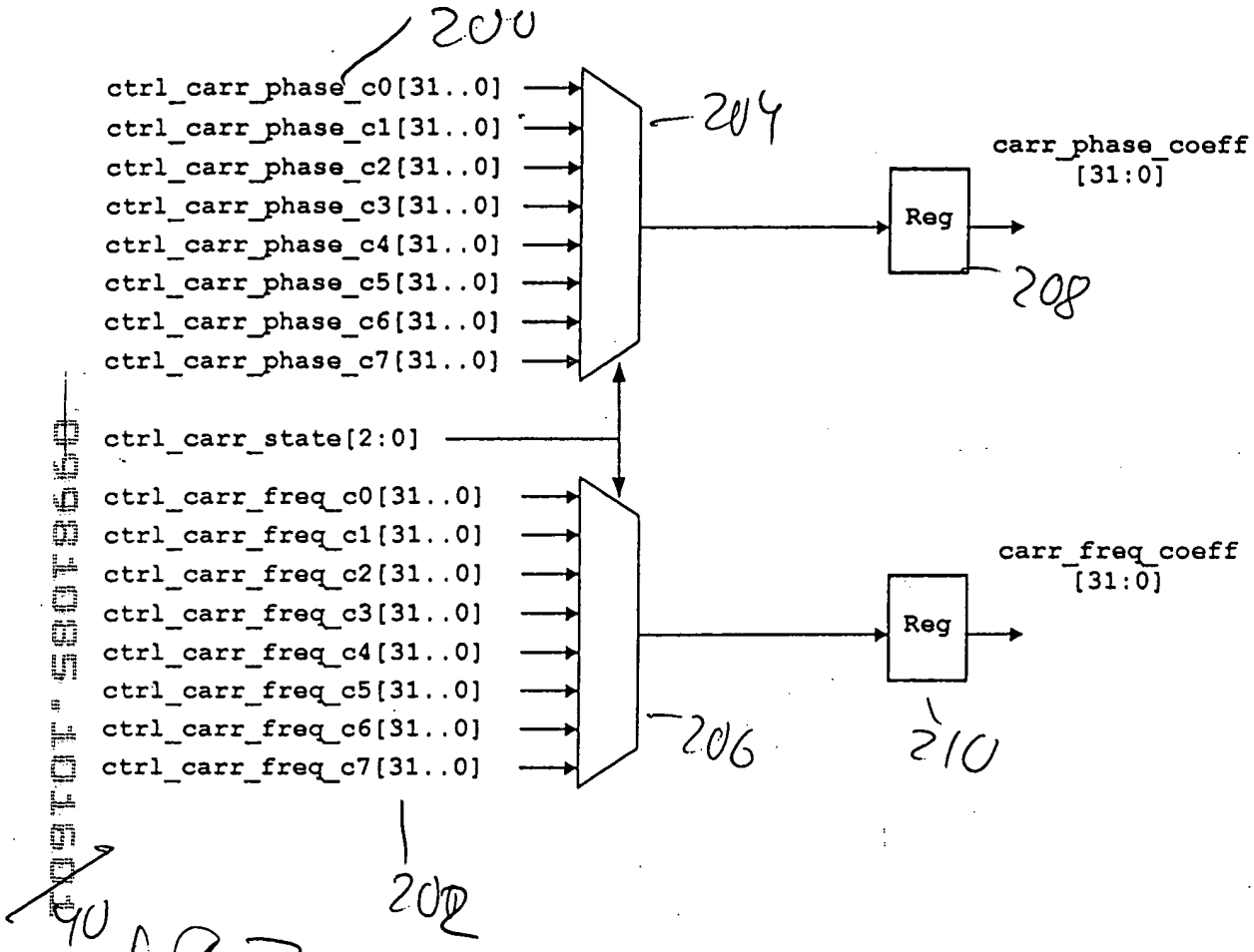


FIG. 7

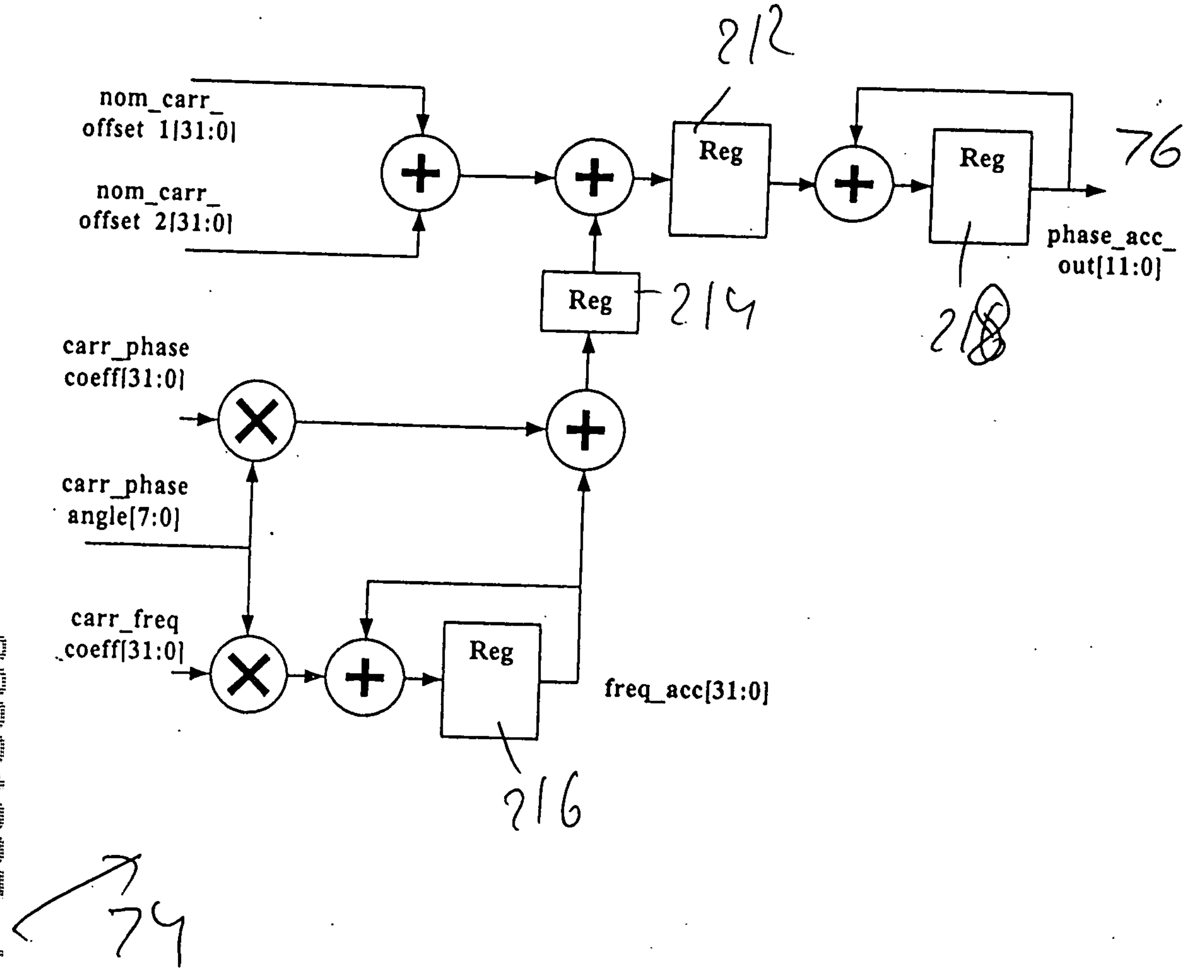
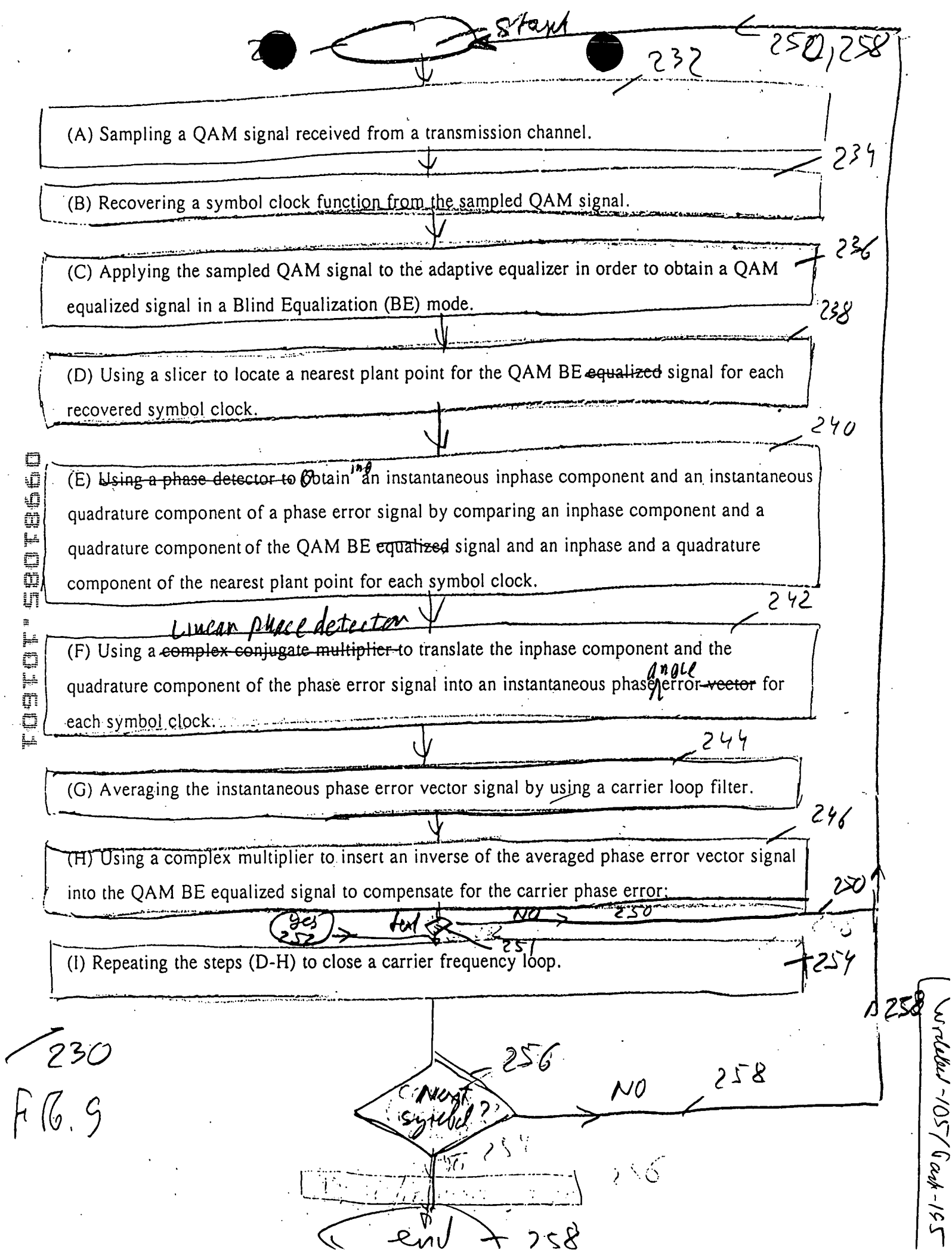


FIG 8. Carrier Loop Filter


Start
232
250, 258
(A) Sampling a QAM signal received from a transmission channel.
234
(B) Recovering a symbol clock function from the sampled QAM signal.
236
(C) Applying the sampled QAM signal to the adaptive equalizer in order to obtain a QAM equalized signal in a Blind Equalization (BE) mode.
238
(D) Using a slicer to locate a nearest plant point for the QAM BE ~~equalized~~ signal for each recovered symbol clock.
240
(E) ~~Using a phase detector to~~ Obtain an instantaneous inphase component and an instantaneous quadrature component of a phase error signal by comparing an inphase component and a quadrature component of the QAM BE ~~equalized~~ signal and an inphase and a quadrature component of the nearest plant point for each symbol clock.
242
Linear phase detector
(F) Using a ~~complex conjugate multiplier~~ to translate the inphase component and the quadrature component of the phase error signal into an instantaneous phase angle error ~~vector~~ for each symbol clock.
244
(G) Averaging the instantaneous phase error vector signal by using a carrier loop filter.
246
(H) Using a complex multiplier to insert an inverse of the averaged phase error vector signal into the QAM BE equalized signal to compensate for the carrier phase error;
248
Yes
252
Next
NO
250
251
(I) Repeating the steps (D-H) to close a carrier frequency loop.
254
258
256
Next symbol?
NO
258
254
end
258
230
FIG. 9
Wireless-105/Card-195

Selecting an initial set of PID coefficients by using the state machine to set the variable bandwidth of the carrier loop filter to be higher than a frequency uncertainty during a QAM signal acquisition state of the QAM demodulator. 262

Adjusting the initially selected set of PID coefficients by using the state machine in order to decrease the initially set bandwidth of the carrier loop filter in incremental stages to be less than the frequency uncertainty during a carrier tracking state of the QAM demodulator. 264

244

Step 6 - Normal Mode

FIG 10

Nvidia-US/Qual-195

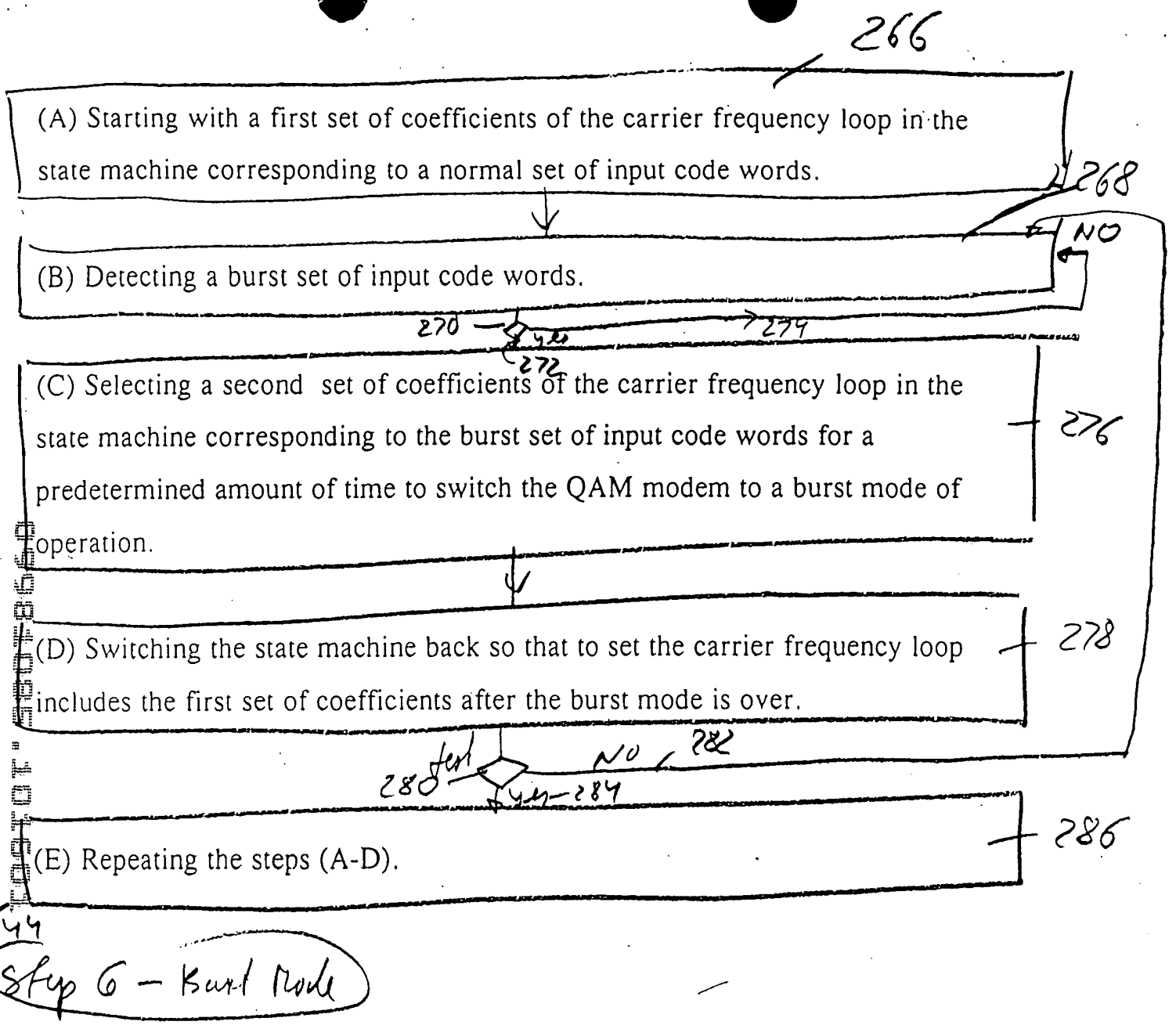

266
(A) Starting with a first set of coefficients of the carrier frequency loop in the state machine corresponding to a normal set of input code words.
268
NO
(B) Detecting a burst set of input code words.
270
272
274
(C) Selecting a second set of coefficients of the carrier frequency loop in the state machine corresponding to the burst set of input code words for a predetermined amount of time to switch the QAM modem to a burst mode of operation.
276
(D) Switching the state machine back so that to set the carrier frequency loop includes the first set of coefficients after the burst mode is over.
278
280
test
NO
282
284
(E) Repeating the steps (A-D).
286
244
Step 6 – Burst Mode

FIG. 11

This Page is Inserted by IFW Indexing and Scanning Operations and is not part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.
As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.